

SUPPORT FOR THE AMENDMENTS

Newly-added Claims 39-58 are supported by the specification. See in particular, page 7, lines 5-12; page 7, lines 32-35; and page 8, lines 8-15. No new matter is believed to have been added to the present application by the amendments submitted above.

REMARKS

Claims 39-58 are pending. Favorable reconsideration is respectfully requested.

As set forth in Claim 39, the present invention relates to a method for the selective concentration of a macromolecule or of an agglomerate of molecules or of particles initially contained in a first liquid phase, which is a liquid sample, successively comprising:

providing a liquid medium, where the liquid medium comprises:

the first liquid phase, which is a liquid sample comprising the macromolecule or the agglomerate to be concentrated; and

a liquid interface layer, where the interface layer (a) is a second liquid phase separated from the liquid sample and deposited at the surface of the at the surface of the liquid sample, (b) comprises at least one molecule which fixes the macromolecule or the agglomerate and (c) has a small volume compared to the volume of the liquid sample;

forming a stabilized dispersion, which is of the foam type or the emulsion type, in the liquid medium, by mechanical agitation of the medium or by injection, directly in the liquid medium, of gaseous or liquid capillary jets, to form, in the case where the dispersion is of the foam type, thin interstitial films between bubbles, and to form, in the case where the dispersion is of the emulsion type, an interstitial medium constituted by the liquid sample in which the liquid interface layer is divided up into globules within said liquid sample; and

resorbing the dispersion to reform the interface layer by drainage of the interstitial film constituting the foam or by drainage of the interstitial medium constituting the emulsion, where the macromolecule or the agglomerate is concentrated in the interface layer.

The rejections of the Claims 20-38 under 35 U.S.C. §112, first and second paragraphs, are believed to be obviated by the amendment submitted above. The rejected claims have been canceled and the issues raised in the Office Action are believed to be moot thereby. Accordingly, withdrawal of these grounds of rejection is respectfully requested.

The rejections of the claims under 35 U.S.C. §103(a) over Lockwood et al. in view of Wilde and further in view of Lalchev et al. and Ijiro et al. are respectfully traversed. These combinations of references fails to suggest the claimed method.

An important feature of the claimed method is that the interface layer comprises at least one molecule which fixes the macromolecule or the agglomerate and is a second liquid phase separated from the liquid sample and deposited at the surface of the at the surface of the liquid sample.

Lockwood et al. describe foam fractionation procedures to purify proteins. This method involves:

- (1) forming bubbles in a feed solution using an inert gas through a glass frit located at the bottom of a glass column containing the feed solution,
- (2) producing an upward-moving foam by rising bubbles, where the foam contains both adsorbed solute (at the surface of the bubbles) and unabsorbed solute (within the interstitial liquid),
- (3) draining the interstitial liquid to promote coalescence of the bubbles,
- (4) collecting foam in a collection beaker, where the foam collapses , producing a foamate enriched in the surface active component.

Nowhere does this reference describe an interface layer comprising at least one molecule able to fix a macromolecule or agglomerate of molecules or of particles initially contained in a liquid sample.

In addition, since Lockwood et al. fail to provide an interface layer, the reference necessarily fails to disclose resorbing the dispersion to reform the interface layer by drainage of the interstitial film constituting the foam or by drainage of the interstitial medium constituting the emulsion, where the macromolecule or the agglomerate is concentrated in the interface layer, as claimed.

Wilder fails to remedy the deficiencies of Lockwood et al. Wilde relates generally to the role of interfaces in foam and emulsion behavior, in particular to the possibility that such interfaces may contain some molecules to stabilize the foam or the emulsion. This reference does not deal with the problem of concentration of a macromolecule or of an agglomerate of molecules or of particles initially contained in a liquid sample via an interface layer as recited in Claim 39. This reference fails to provide motivation to modify the foam fractionation procedure described by Lockwood et al. to arrive at the claimed method.

Lalchev et al. describes purification of proteins using foam fractionation. See the Abstract. The reference fails to disclose an interface layer, where the interface layer a liquid interface layer, wherein the interface layer (a) is a second liquid phase separated from the liquid sample and deposited at the surface of the at the surface of the liquid sample, (b) comprises at least one molecule which fixes the macromolecule or the agglomerate and (c) has a small volume compared to the volume of the liquid sample.

The method disclosed in Lalchev et al. differs significantly from the method of the present invention. Lalchev et al. does not involve the presence of an interfacial layer located at the surface of a liquid sample. The reference also does not relate to the formation of a dispersion followed by resorption, allowing reconstitution of the interface located at the surface of the liquid sample.

Ijiri et al. provide a method of detecting a nucleic acid polymer in an aqueous phase. See the Abstract. However, this reference neither discloses nor suggests forming a stabilized dispersion followed by a resorption step, as claimed.

In view of the foregoing, the claimed method is not suggested by Lockwood et al. in view of Wilde and further in view of Lalchev et al. and Ijiri et al. Accordingly, the subject matter of the pending claims is not obvious over those references. Withdrawal of these grounds of rejection is respectfully requested.

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Applicants submit that the present application is in condition for allowance. Early notice to this effect is earnestly solicited.

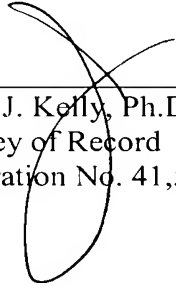
Respectfully submitted,

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